

Patent Claims

1. A method for operating a drive train of a motor vehicle with
  - an automated gearwheel change gearbox (15),
  - an automated clutch (14) and
  - a control device (17) for controlling the gearwheel change gearbox (15) and the clutch (14),
- 5 the clutch (14) being opened when shifting takes place from an original gear to a target gear of the gearwheel change gearbox (15),  
characterized in that the control device (17)
  - triggers the clutch (14) for closing before the target gear is fully engaged and
  - determines a triggering moment  $t_{trig}$  for the clutch (14) as a function of operational parameters and/or state variables of the drive train (10).
- 10 2. The method as claimed in claim 1, characterized in that the control device (17) determines the triggering moment  $t_{trig}$  as a function of a desired profile of a clutch position during closing of the clutch (14).
- 15 3. The method as claimed in claim 2, characterized in that the desired profile has a smaller gradient within a range around a gripping point of the clutch (14) than outside said range.

4. The method as claimed in claim 1, 2 or 3, characterized in that the control device (17)

- determines a first interval  $\Delta t_{eng}$  which is necessary in order to engage the target gear and
- a second interval  $\Delta t_{grip}$  which is necessary in order to reach the gripping point of the clutch (14) and determines the triggering moment  $t_{trig}$  from said intervals.

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5. The method as claimed in claim 4, characterized in that the control device (17) takes a safety period  $\Delta t_{saf}$  into consideration in the determination of the triggering moment  $t_{trig}$ .

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6. The method as claimed in claim 5, characterized in that the safety period  $\Delta t_{saf}$  is variable.

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7. The method as claimed in one of claims 1 to 6, characterized in that the control device (17)

- compares the clutch position with progress of the engagement of the target gear during closing of the clutch (14) and
- depending on a result of the comparison, changes the desired profile of the clutch position.

30 8. The method as claimed in claim 7, characterized in that the control device (17) opens the clutch (14) again after breaking off the closing of the clutch (17) and the clutch (14) begins to close again only after the target gear is fully engaged.

9. The method as claimed in claim 6, 7 or 8, characterized in that the safety period  $\Delta t_{saf}$  is varied as a function of

5 - a third interval  $\Delta t_{act}$  between a moment at which the target gear is fully engaged and a moment at which the clutch (14) reaches the gripping point and/or

- the result of said comparison and/or

10 - a failure of the engagement of the target gear.

10. The method as claimed in claim 7, characterized in that the control device (17) changes the desired profile of the clutch position as a function of said comparison.